

# **Model Stormwater Pollution Prevention Plan for Nonmetallic Mining Operations**

Note: a DNR storm water permit does not require use of this particular Storm Water Pollution Prevention Plan (SWPPP). This document is intended solely as guidance and does not contain any mandatory requirements except where requirements found in statute or administrative rule are referenced. This guidance does not establish or affect legal rights or obligations, and is not finally determinative of any of the issues addressed. This guidance does not create any rights enforceable by any party in litigation with the State of Wisconsin or the Department of Natural Resources. Any regulatory decisions made by the Department of Natural Resources in any matter addressed by this guidance will be made by applying the governing statutes and administrative rules to the relevant facts.

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## A. OVERVIEW

**Conventions used in this model: Shaded areas present guidance that should be used to develop your plan. Unshaded areas are text inclusions in the plan.**

This model Stormwater Pollution Prevention plan (SWPPP) is for use by operators of externally drained nonmetallic mining (NMM) sites that are regulated by WPDES general permit WI-0046515-3 as found on page 19, Section G of the permit. It can also be used to develop a SWPPP for Portable Operations at Nonmetallic facilities as required on Page 25 Section H. of the general permit. A NMM site with a specific permit for nonmetallic mining can also use it as a guideline to develop a plan for their facilities. The guidance presented here lists best management practices (BMPs) and design criteria that must be addressed at the NMM site and incorporated into the plan as necessary to protect the waters of the state. Not all BMPs will be needed at all sites, but each site's storm water pollution prevention plan must address BMPs for each potential source of storm water contamination including erosion from access roads, material stockpiles and any area subject to erosion.

Internally drained NMM sites have permit requirements that differ from externally drained sites and the BMPs selected will need to address only those portions of the site that may drain off the site. These are usually the access roads that may drain away from the pit or portions of those roads that don't drain into the pit. See Page 16, Section F. of the permit for the requirements for internally drained sites.

Externally drained nonmetallic mining sites are sites where stormwater leaves the site, either by gravity flow, or active pumping, and enters the waters of the state. The definition of "waters of the state" is :

**283.01 (20) Wis.Statutes** *"Waters of the state" means those portions of Lake Michigan and Lake Superior within the boundaries of Wisconsin, lakes, bays, rivers, streams, springs, ponds, wells, impounding reservoirs, marshes, water courses, drainage systems and other surface water or groundwater, natural or artificial, public or private within the state or under its jurisdiction, except those waters which are entirely confined and retained completely upon the property of a person.*

Internally drained sites drain all stormwater or wastewater into an area of the site that does not leave the property boundary of the site. Internally drained sites do not discharge water at any time to surface waters or wetlands beyond the boundary of the site that are defined as the waters of the state.

NMM sites that are leased by an operator and externally drained need to develop a SWPPP. The SWPPP can be developed by either the owner or the operator. An operator engaged in nonmetallic mining on a site is responsible for the wastewater produced by their mining activities, it is therefore the operator that is required to monitor any wastewater that is related to such activities. The operator is also most likely to have ongoing expertise in the development and implementation of stormwater prevention plans, and is the preferred party to develop the SWPPP.

## **B. GENERAL FACILITY INFORMATION**

Name of Facility: \_\_\_\_\_

Facility Address: \_\_\_\_\_

Facility Contact: \_\_\_\_\_

Name: \_\_\_\_\_

Title: \_\_\_\_\_

Telephone: \_\_\_\_\_

Mailing Address: \_\_\_\_\_

\_\_\_\_\_

Owner: \_\_\_\_\_

Operator: \_\_\_\_\_

(if different from Owner)

Standard Industrial classification (SIC) Code: \_144x

Permit Information:

Permit Number: WI-00465150-3

Initial Date of Coverage: (Start Date on your Cover letter) \_\_\_\_\_

Number of Storm Water Outfalls: \_\_\_\_\_

Receiving Water \_\_\_\_\_

Emergency Contact (preferably on-site):

Name: \_\_\_\_\_

Telephone: \_\_\_\_\_

## C. OBJECTIVES

This storm water pollution prevention plan (SWPPP) covers the operations at **insert facility name**. It has been developed as required under Section G of Wisconsin's Pollutant Discharge Elimination System (WPDES) general permit WI-0046515-3 for Externally Drained nonmetallic mining operations in accordance with good engineering practices. This SWPPP describes this facility and its operations, identifies potential sources of storm water pollution at the facility, recommends appropriate best management practices (BMPs) or pollution control measures to reduce the discharge of pollutants in storm water runoff, and provides for periodic review of this SWPPP.

The primary goal of the storm water permit program is to improve the quality of surface waters by reducing the amount of pollutants potentially contained in the storm water runoff. Externally drained nonmetallic mining sites subject to industrial storm water WPDES permit WI-0046515-3 must prepare and implement a SWPPP for their facility.

The BMPs that are used on a site are dictated by the site conditions. However the following principles of erosion and sediment control are defined in the Wisconsin Construction Site Best Management Practices Handbook, and apply on NMM sites as well:

- ◆ Minimize disturbed areas
- ◆ Stabilize inactive disturbed areas
- ◆ Keep runoff velocities low
- ◆ Protect disturbed areas from stormwater runoff
- ◆ Retain sediment within the site boundaries
- ◆ Maintain the BMP practices selected

This SWPPP will:

- ◆ identify sources of storm water and non-storm water contamination to the storm water drainage system;
- ◆ identify and prescribe appropriate best management practices designed to prevent storm water contamination from occurring;
- ◆ identify and prescribe best management practices to reduce pollutants in contaminated storm water prior to discharge;
- ◆ prescribe actions needed either to bring non-storm water discharges under the WPDES permit or to remove these discharges from the storm drainage system;
- ◆ prescribe an implementation schedule so as to ensure that the storm water management actions prescribed in the Storm Water Pollution Prevention Plan are carried out and evaluated on a regular basis.

## Stormwater Pollution Prevention Plan Inclusions

Each facility will be required to complete the storm water pollution prevention plan as required in Sections G, and H of general permit WI-0046515-3. This plan, known as a SWPPP, should include the following items:

The plan must describe the activities, materials and physical features of the facility that may contribute to storm water runoff. The plan must contain a map of the site that shows the pattern of storm water drainage, structural features that control pollutants in storm water runoff and process wastewater discharges to surface water bodies including wetlands. It should show places where significant materials are exposed to rainfall and runoff. Locations where major spills and leaks have occurred in the last three years should be indicated. Areas where activities such as fueling, equipment maintenance, loading and unloading, material processing, waste disposal are done, and haul roads, access roads and rail lines, should also be located. In addition, the site map must indicate the outfall locations and type(s) of discharge(s) draining to the outfalls. An outfall is any place, device, pipe, swale, ditch etc., where wastewater or stormwater runoff leaves the permitted property.

The plan should describe the method and location of onsite storage or disposal practices used to minimize contact with rainfall and runoff; existing structural and nonstructural controls to reduce pollutants in storm water runoff; existing structural controls that limit process wastewater discharges; and any treatment the runoff receives before it is discharged to surface waters or a separate storm sewer system. The plan should include a narrative of the potential pollution risks associated with each of the activities, materials, and physical features of the facility that have a reasonable potential to contribute significant amounts of pollutants to storm water. The narrative should address the following areas; loading and unloading operations, outdoor storage activities, outdoor processing activities, significant dust or particulate generating processes, and onsite waste disposal practices.

The plan must indicate the BMPs that will be implemented at the facility and assess the applicability of them to control the sources identified. The plan should present the reasons each BMP was selected and it must include a schedule of the specified time or times during which each control practice will be implemented. The plan must also include a preventive maintenance program that will ensure that the BMPs will be maintained throughout the life of the operation.

## D. STORM WATER POLLUTION PREVENTION TEAM

The storm water pollution prevention team is responsible for developing, implementing, maintaining, and revising this SWPPP. The members of the team are familiar with the management and operations of **insert facility name**.

**Identify by job title the person in charge** of all aspects of SWPPP development and implementation. The member(s) of the team and their responsibilities (i.e. implementing, maintaining, record keeping, submitting reports, conducting inspections, employee training, conducting the annual compliance evaluation, testing for non-storm water discharges, signing the required certifications) are as follows:

Name & Title	Responsibility

### Employee Training

Employee training is a major component in ensuring the success of the facility SWPPP. The more knowledgeable all employees are about the facility's SWPPP and what is expected of them, the greater the chance that the plan will be successful.

The following is a description of the employee training programs to be implemented to inform appropriate personnel at all levels of responsibility of the components and goals of the SWPPP. (Examples: good housekeeping practices, spill prevention and response procedures, waste minimization practices, informing customers of facility policies, etc.)

Topic	Employees Included	Frequency

## E. SITE MAP

Appendix B (attached) presents a site map of the facility showing the following features as required by the permit:

- ◆ the facility property boundaries;
- ◆ a depiction of the storm drainage collection and disposal system, including all known surface and subsurface conveyances, with the conveyances named;
- ◆ any secondary or other containment structures;
- ◆ the location of all outfalls, including outfalls recognized as permitted outfalls under another WPDES permit, numbered for reference, that discharge channelized flow to surface water, groundwater, or wetlands;
- ◆ the drainage area boundary for each storm water outfall;
- ◆ the surface area in acres draining to each outfall;
- ◆ the topographic contours of the site
- ◆ Groundcover features within each outfall drainage area;
- ◆ Potential sources that contribute to pollution in the runoff, such as haul roads, equipment maintenance and storage areas, fuel storage areas etc.
- ◆ the name and location of receiving waters

## F. POTENTIAL SOURCES OF POLLUTANTS

### Erosion Control Measures

Areas prone to soil erosion shall be protected, and the soil kept out of the storm water discharge.

*Note: See Appendix A for a listing of typical BMPs that are commonly used at nonmetallic mining sites.*

Storm water management controls, or best management practices (BMPs), will be implemented to reduce the amount of pollutants in storm water discharged from **insert facility name**

The general objective for NMM sites is to:

- ◆ Minimize stormwater runoff from the active mining areas of the pit
- ◆ Collect and retain sediment from active areas of the pit
- ◆ Minimize velocities from access roads that drain out of the pit
- ◆ Collect sediment from access roads and vehicles that operate in the pit and drain out of the pit

The mix of BMPs selected for a NMM site depends on the site conditions and topography. It is therefore necessary to have an accurate topographical map of the site that is kept up to date as the site is mined and the topography changes. The BMPs must adapt to the site changes as mining progresses.

The SWPPP must address the responsibilities for ongoing maintenance of the BMPs selected as well as the personnel responsible for maintaining them. It must also include provisions for training of the personnel working in the site to instruct them in the principles of stormwater runoff control and their responsibility for it. This can be handled in an annual training program that addresses these issues.

## **G. STORMWATER TREATMENT BEST MANAGEMENT PRACTICES**

### **a. TREATMENT BMPs or STRUCTURAL CONTROLS**

Structural control measures such as settling ponds may be necessary to control pollutants that are still present in the storm water after the non-structural controls have been implemented. These are physical features that control and prevent storm water pollution. They can range from permanent preventive measures and collection structures to treatment systems. Structural controls will require construction of a physical feature or barrier. (If no structural control measures are needed at the facility, state that in this section).

#### **Best Management Practices for Sediment Ponds**

It is recommended that sediment control ponds and/or other sediment and erosion control BMPs used on a NMM site be designed in accordance with the criteria in the Wisconsin Construction Site Best Management Practice Handbook, Methods A or B, or the Facilities Development Manual of the Wisconsin Department of Transportation, Division of Highways. The pond will need to be sized to handle all the runoff that leaves the site either by gravity flow or active pumping. If all the stormwater runoff on a site can be channeled into this pond, the pond will need to be sized for the area tributary to it. It is recommended that the pond be sized to accommodate a 10 year storm event. Critical numbers that must be determined for the site are: the surface area tributary to the pond, the area of the pond, the elevation of the pond base and the elevation of the outlet pipe, the orifice size of the outlet pipe, the elevation of the 10 year overflow structure and the cleaning schedule of the pond. These items are necessary to calculate the ability of the pond to remove sediment and pollutants.

If a pond is used for both stormwater control and process water treatment, the pond must be sized to achieve a discharge concentration of 40 mg/l at all times it discharges to the waters of the state.

**In your SWPPP show the calculations you used to determine the size of the pond that will be used to treat stormwater runoff from your site. Refer to the construction site handbook or the WisDOT manual for directions on how to complete these calculations for your site.**



Ponds or Containment structures will be/have been installed in the following areas:

Area on Site Map	Pond Sizing Calculations

## **b. PREVENTIVE MEASURES**

Preventive measures are controls that are intended to prevent the exposure of storm water to contaminants.

The following preventive measures must be addressed in the plan where they are appropriate and identified on the site diagram:

Soil stabilization practices

Diversion practices

Overland flow practices

Access road tracking practices

Vehicle washwater disposal and control practices

Solvent and bulk petroleum control and prevention practices

Salt storage and drainage control practices for any bulk salt piles on site

Preventive measures to control pollution from SARA section 313 priority chemicals kept on site

### **Structural Best Management Practices Other than Water Treatment**

The BMPs that are used on a site are dictated by the site conditions. However the following principles of erosion and sediment control are defined in the Wisconsin Construction Site Best Management Practices Handbook, and the WisDOT manual.

## Discharge Diversions

The diversion structures to be used in this nonmetallic mining operation are:

- ◆ Diversion dikes, curbs, and berms are temporary diversion structures that prevent runoff from passing beyond a certain point.
- ◆ New drainage or storm water conveyance systems; the use of drainage systems is a permanent measure and is most appropriate with extreme slopes.

### Best Management Practices That Might Be Appropriate For Roads

- ◆ Channels or gutters
- ◆ Open box culverts and water bars
- ◆ Rolling dips and road sloping
- ◆ Roadway surface water deflectors

### Typical Runoff Dispersion Methods Which May Be Used Are

- ◆ Check dams
- ◆ Rock outlet protection such as riprap
- ◆ Level spreaders
- ◆ Serrated slopes and benched slopes
- ◆ Contouring
- ◆ Drain fields
- ◆ Stream diversion
- ◆ Drop structures

### Temporary Measures Which May Help Control Sediment In Runoff Are

- ◆ Plastic matting or netting, and erosion control blankets
- ◆ Straw mulch, or wood chips
- ◆ Soil compaction
- ◆ Straw bail barriers
- ◆ Vegetated buffer strips
- ◆ Sediment traps
- ◆ Silt fence
- ◆ Brush sediment barriers

### More Permanent Vegetated Measures Which Might Be Taken Are

- ◆ Permanent seeding of inactive areas
- ◆ Spreading of topsoil with appropriate seeding
- ◆ Broadcast seeding with mulching

**Please note any alteration of stream banks requires an evaluation for a permit under Chapter 30 or 31, Wis. Statutes, before any work can be initiated. Also any alteration of wetlands needs to be evaluated for compliance with ch. NR 103, Wis. Adm. Code (Water quality Standards for Wetlands) such as through a ch.**

Complete the following table for all areas to be protected by these practices and use your site map to identify where the following areas are to be protected through the use of non-treatment structures.

Area on Site Map	Control Measure

### c. Residual Pollutant Controls

#### Bulk Storage and Residual Pollutants

Bulk storage piles will be managed following the best management practices described in WDNR publication “Storage Pile Best Management Practices” ,WT-468-96.

After the implementation of the non-structural controls, the following significant materials are expected to be present in the storm water discharge. These materials will be addressed through the use of structural controls.

The potential for the following chemicals to be present must be evaluated.

- ◆ Any pollutant that has an effluent limit in any discharge permit issued to this facility.
- ◆ Any SARA 313 chemicals on the property that could contaminate stormwater must be evaluated. The listing of SARA 313 chemicals may be found at <http://www.epa.gov/ceppo/pubs/title3.pdf>
- ◆ Any toxic or hazardous pollutant from present or past activity at the site which could be in contact with precipitation or storm water runoff and thus be discharged to the waters of the State and is not regulated by any other environmental program.
- ◆ Total suspended solids, pH, and occasionally Oil and Grease

There are other control measures that can be used that may not fit into one of the previously mentioned categories. The use of such controls is encouraged. These may be appropriate for areas of petroleum storage, or equipment maintenance etc.

The following additional controls have to be used at the facility. (Examples: sumps, oil/water separators, sand filters, vegetative filters, basins [collection, retention, detention], reduce, reuse, and recycle materials, drip pans, secondary containment for fuel storage and filling areas etc.)

Area on Site Map	Material	Control Measure

#### **d. Implementation Schedule**

BMP on Site Map	Date Control Measure will be installed

Explain in this section the time schedule that will be maintained to install the BMPs that are needed on the site. Keep in mind that the permit requires that all BMPs be active and operating within 24 months of the EFFECTIVE Date on your permit cover letter.

## H. RECORD KEEPING AND REPORTING

### QUARTERLY VISUAL MONITORING

#### Quarterly visual Comprehensive Inspections

The permit requires a quarterly inspection of the stormwater runoff. These inspections must be conducted during a runoff event. Records of the inspections must be kept on file with the SWPPP. The water must be checked for physical properties such as odor, color, turbidity, suspended solids, or foam.

The **insert position description** shall perform and document quarterly visual inspections of storm water discharge quality at each storm water discharge outfall. Inspections shall be conducted within the first 30 minutes of discharge or as soon thereafter as practical, but not exceeding 60 minutes. The inspections shall include any observations of color, odor, turbidity, floating solids, foam, oil sheen, or other obvious indicators of storm water pollution. Information reported shall include the inspection date, inspection personnel, visual quality of the storm water discharge, and probable sources of any observed storm water contamination.

#### Implementation Schedule

This SWPPP becomes effective as of **insert date**. The non-structural controls will be implemented by **insert date**. Structural controls will be in place by **insert date**.

All reports and records pertaining to the permit coverage under this general permit shall be retained for the later of 5 years beyond the date of the permit cover letter, or for a minimum of three years. The records are to be kept on site and shall be made available to the Department of Natural Resources upon request. In the case of facilities which discharge storm water to a municipal separate storm sewer system, the records must also be made available to the operator of the municipal system.

A current copy of the Stormwater Pollution Prevention Plan Summary must be sent to the Department Of Natural Resources regional office. Use form number 3400-167 that is available on the DNR web site at <http://www.dnr.state.wi.us/org/water/wm/nps/publications.htm#forms>

Quarterly Visual Inspection Fact Sheet  
Annual Facility Site Compliance Inspection Report  
Stormwater Pollution Prevention Plan Summary

## I. CERTIFICATION OF THE SWPPP

"I certify under penalty of law that the Storm Water Pollution Prevention Plan (SWPPP) required by WPDES General Permit No. WI-0046515-3 has been completed and retained on site at the facility, at the company headquarters, or any other location approved by the Department. The SWPPP and attachments were completed under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information contained in the plan. Based on my inquiry of the person, or persons, who manage the system, or those persons directly responsible for gathering the information; the information contained in the SWPPP is, to the best of my knowledge and belief, true, accurate and complete. I am aware that there are significant penalties for providing false information, including the possibility of fine and imprisonment. In addition, I certify under penalty of law that, based upon inquiry of persons directly under my supervision, to the best of my knowledge and belief, the SWPPP adheres to the storm water control provisions of WPDES General Permit No. WI-0046515-3 for the development and implementation of a Storm Water Pollution Prevention Plan and that the plan will be complied with."

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(Signature of Plan Preparer)

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(Printed Name)

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(Date)

---

(Signature of Authorized Representative)

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(Date)

---

(Printed Name)

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(Title)

# Appendix A

## **Best Management Practices and Pollution Prevention Plan Guidance for Storm Water Discharges Associated with Nonmetallic Mining Operations Regulated by WPDES General Permit WI0046515-3**

### **1 General Considerations**

This guidance is presented to assist facilities regulated by WPDES general permit WI-0046515-3 to evaluate the applicability of various types of best management practices (BMPs) for use in the nonmetallic mining industry in Wisconsin. It is adapted from the guidance given in the Federal Register Vol. 60, No. 189, September 29, 1995. It provides examples of BMPs that may meet regulatory requirements, but should not be considered the only way to address these issues.

This document is intended solely as guidance and does not contain any mandatory requirements except where requirements found in statute or administrative rule are referenced. This guidance does not establish or affect legal rights or obligations, and is not finally determinative of any of the issues addressed. This guidance does not create any rights enforceable by any party in litigation with the State of Wisconsin or the Department of Natural Resources. Any regulatory decisions made by the Department of Natural Resources in any matter addressed by this guidance will be made by applying the governing statutes and administrative rules to the relevant facts.

BMPs are applied as appropriate to those areas of the facility that might be subject to runoff from a storm event or snowmelt. This evaluation does not cover discharges subject to effluent limitations associated with production related waste water discharged within 48 hours of a storm event. Federal guidelines do not exempt stormwater discharges that are co-mingled with process water that must meet process water limits. Therefore, any facility that is co-mingling discharges may be subject to the process water limits at all times it is discharging co-mingled process wastewater and stormwater runoff.

Some of the industrial activities which will be considered are the following, but are not limited to those listed: industrial plant yards, immediate access roads, rail lines, manufactured product storage areas, waste material storage areas, byproduct storage areas, and material handling sites or refuse sites. Also included would be sites used for the storage and maintenance of material handling equipment, sites used for wastewater or residual treatment storage and disposal, shipping and receiving areas, and storage areas for intermediate and finished products.

The base operations that would be likely to contribute materials that would be subject to storm water runoff controls would be: extraction, mineral sizing, crushing, sorting, and product washing.

Significant materials that may be found in runoff from sites such as these would be; particulates from raw materials, fuel, materials such as solvents, and finished materials. There may also be instances where hazardous substances found in section 101(14) of federal law CERCLA and NR 605 Wis. Admin. Code, might be discharged in stormwater runoff.

The most common materials likely to be found on nonmetallic sites would be overburden, waste rock, petroleum based products, and solvents.

#### **Open pit and quarry mining**

***The activities associated with this nonmetallic mining which might be subject to groundwater or surface water discharges associated with storm water are:***

Extraction or removal of overburden, land-disturbing activities such as piling of topsoil, overburden, or waste rock, blasting, crushing, and material handling activities that create dust. Construction of access roads and rail lines and associated loading and unloading. Also associated with this type of mining might be sediment ponds that receive process wastewater or pit dewatering, or residuals from dust and particulate matter collected by air pollution control mechanisms.

The pollutants most likely to be associated with the runoff from these facilities would be total suspended solids, and total dissolved solids. In some situations oil and grease may also be associated with the discharge and in some rock formations, high pH might be a factor.

#### **Typical Stormwater Runoff Pollutant Concentrations Associated with Mining, Dimension Stone and crushed Stone, in Mg/L**

Parameter	Mean	Maximum	Median
Total suspended solids	2522	27,100	124
Total P	.70	7.06	.20
BOD5	6.3	22.3	4.0
Nitrate+Nitrite N2	.59	3.0	.10
Total Kjeldahl N2	1.5	5.71	.87
pH		8.5	7.2
Oil and Grease	1.7	10.0	0

#### **Typical Stormwater Runoff Pollutant Concentrations Associated With Mining, Sand and Gravel Products, in Mg/L**

Parameter	Mean	Maximum	Median
Total suspended solids	503	2400	97
Total P	1.39	4.69	.53
BOD5	6.4	35.0	3.3
Nitrate+Nitrite N2	1.56	9.0	.41
Total Kjeldahl N2	1.79	4.9	1.42
pH	0	10.0	8.2
Oil and Grease	1.3	5.9	0

#### **Options For Controlling Pollutants from A Nonmetallic Mining Site.**

End of pipe treatment can be done for all runoff from the site. However this may not be practical in many situations due to the limitations in area available on the site. In most situations implementing best management practices that are appropriate to the type of nonmetallic mining being done on the site are the only practical alternatives to improving the quality of the site runoff. The most effective BMPs will be dependent on considerations such as facility size, climate, location, hydrogeology, and the environmental concerns of each individual site, such as wetland impacts and discharges to exceptional or outstanding surface waters. Since most activity taking place on a nonmetallic mining site is very similar to the type of activity taking place on large construction sites where excavation and grading is being done, those best management practices that are designed to minimize or eliminate particulate matter associated with runoff from a construction site are appropriate for nonmetallic mining facilities. Typical land disturbing activities at nonmetallic mining sites include, constructing roads, excavating open pits, quarrying, rock piles, and so forth. BMPs that minimize erosion and sedimentation will be most effective if installed as close as possible to the source. A good resource for determining the appropriate BMP is the Wisconsin Construction Site Best Management Practice Handbook Pub #WR-222 93 Rev (DOA Stock #1700). It costs \$6.30 plus tax, and it can be ordered by credit card. Call 1-800-362-7253 to order a copy.



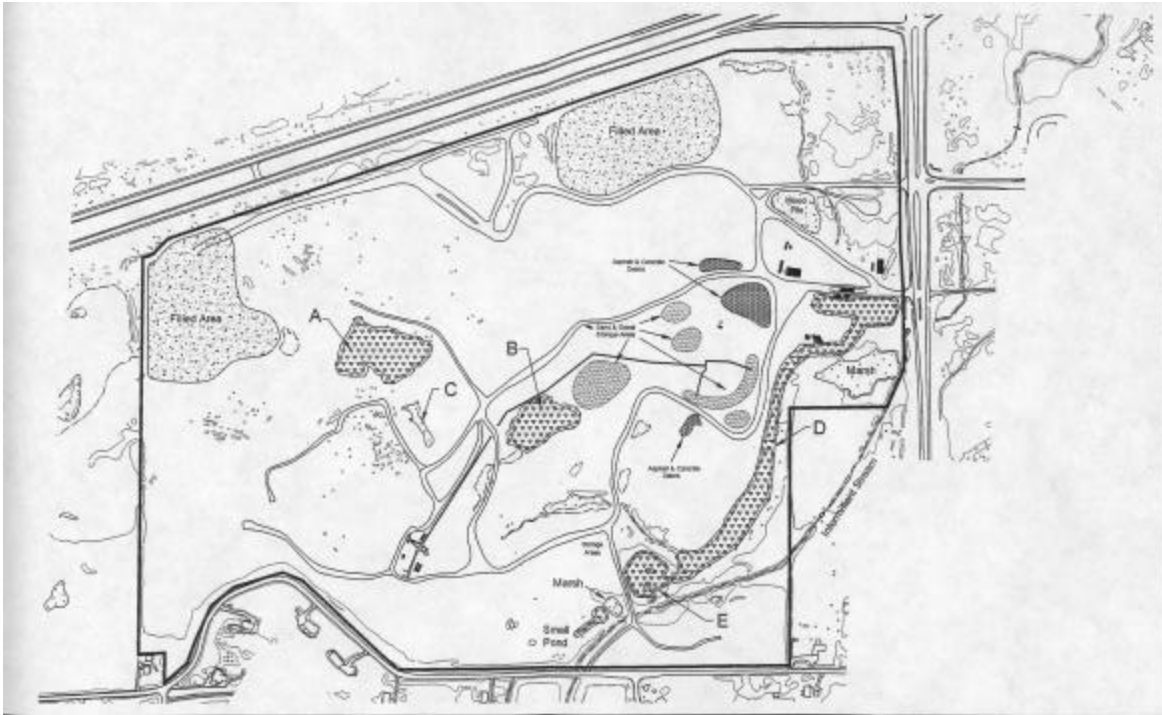
## Best Management Practices Appropriate To Nonmetallic Mining Sites

Site Activity	BMPs
1. Haul roads and access roads	Dikes, curbs, and berms; check dams, outlet protection, level spreaders, drop structures, gabions, riprap, retaining walls, straw bale barriers, sediment traps, vegetated buffer strips, seeding
2. Quarry pits	Dikes, curbs and berms, serrated slopes, benched slopes, contouring, settling ponds, straw bale barriers, siltation berms, vegetation seeding
3. Rock piles and waste piles	Dikes, curbs and berms, serrated slopes, benched slopes, contouring, stream channel diversion, plastic matting, erosion control blankets, straw mulch, compaction, sediment settling ponds, silt fences, siltation berms, vegetation seeding,

In general, the maximum amount of protection will be afforded when the minimum amount of land is disturbed. The storm water pollution prevention plan should address those issues where the excavation can be minimize and the facility still operate in an efficient manner.

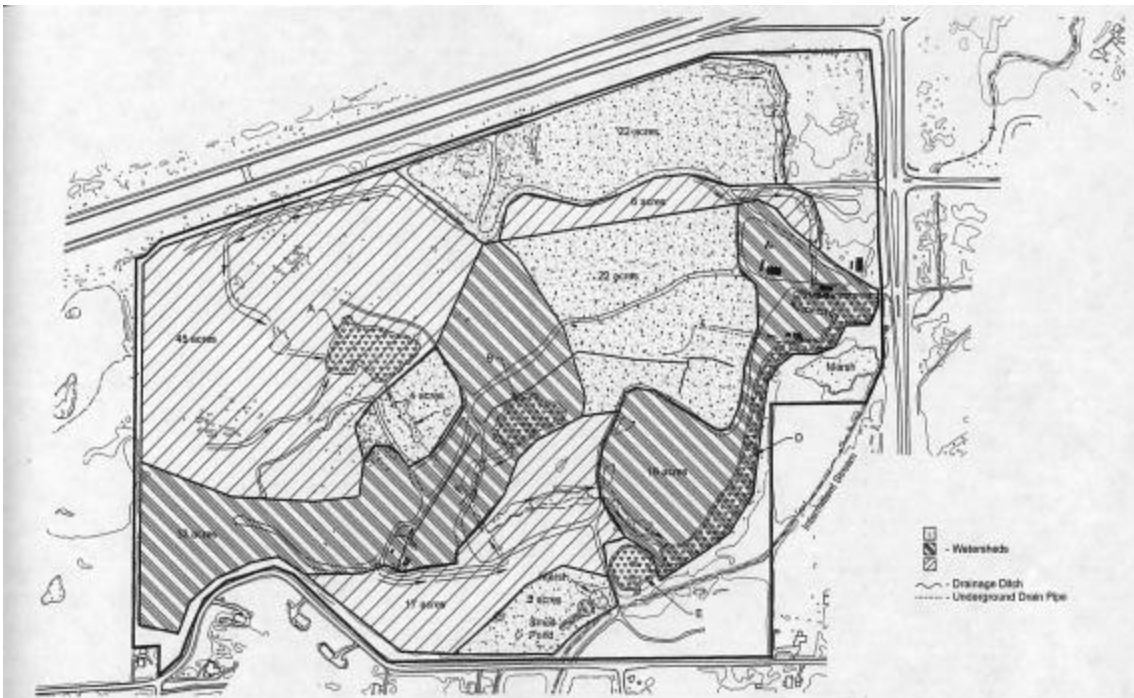
## APPENDIX B

### Example of a site map showing existing site conditions

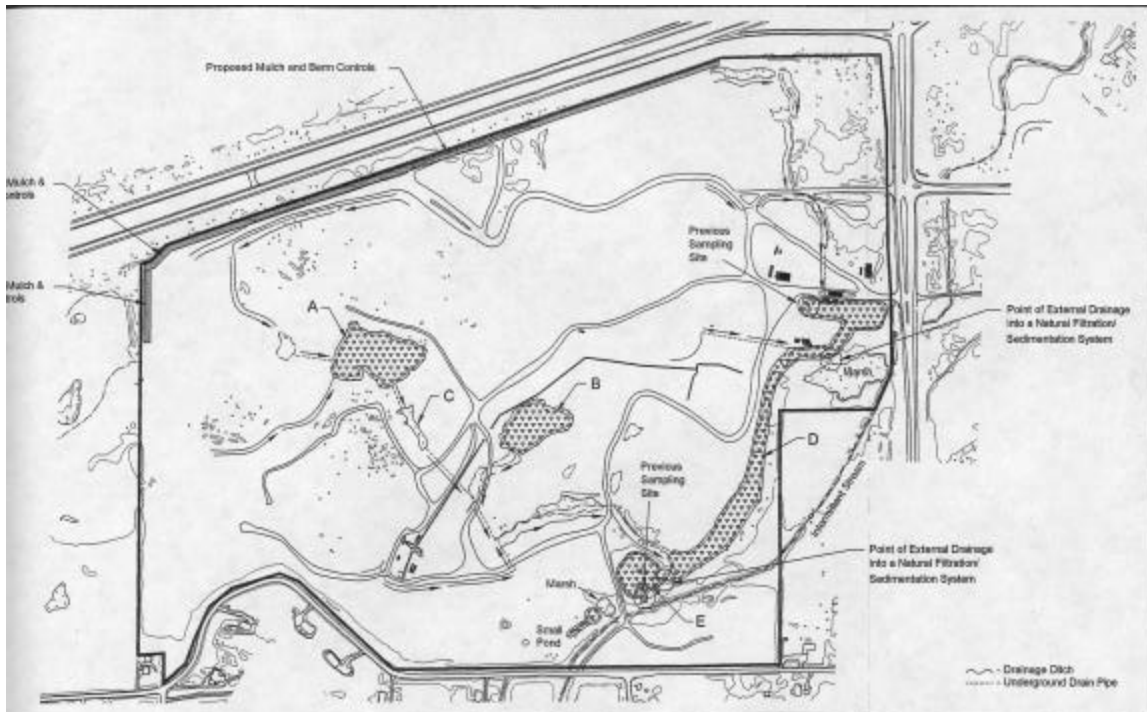


Note: This example does not show the topographic contours of the site. Topographic contours should be shown to estimate runoff rates from the site.

### Example of a site map showing drainage areas on the site and the discharge outfalls from the areas



**Example of site map showing the proposed BMPs to contain sediment in the runoff**



Note: the size of the sedimentation ponds must be adequate to contain a 10 year storm event. The calculations must be in agreement with the Wisconsin Construction Site Handbook or WI DOT specifications.